

1. GENERAL
- THIS PROJECT INVOLVES THE MODIFICATION OF AN EXISTING SIGNAL AT THE INTERSECTION OF MD 650 (NEW HAMPSHIRE AVE.) AND BONIFANT ROAD/ GOOD HOPE ROAD IN MONTGOMERY COUNTY. THE TRAFFIC SIGNAL SHALL BE UPGRADED WITH APS & CPS FOR THE INTERSECTION CROSSING. THE MAINLINE SHALL BE CHANGED FOR E/P FIVE (5) SECTION HEADS TO THREE (3) SECTION EXCLUSIVES FOR THE NB AND SB APPROACHES.
- II. INTERSECTION OPERATION
1. THE INTERSECTION IS TO OPERATE IN A FULLY ACTUATED MODE USING 8 NEMA PHASES 4 ACTUATED MODES, WITH THE MAINLINE LEFT TURNS BEING ACTUATED BY 6FT. BY 30 FT. LOOP DETECTORS AND THE SIDE STREETS PRESENCE SHALL BE ACTUATED BY 6 FT. BY 30 FT. LOOP DETECTORS.
- NOTES
1. For final pavement markings, refer to the pavement marking plans, as applicable; other than those detailed on the plan. All pavement markings shall be installed in accordance with Administration standards.
2. The contractor shall be responsible for terminating all signal cable to the appropriate terminals and properly label each cable.
3. All traffic signal foundations shall be installed at the final sidewalk or curb grade for closed sections, highest roadway profile grade for open sections, to meet clearances as specified in the appropriate 800 series Standard Plates. The contractor shall verify ultimate grades prior to the installation of all signal equipment.
4. All underground and overhead utilities shown on these plans are schematic only and may not be complete. The Contractor shall be responsible for notifying Miss Utility prior to construction so that all utilities may be located in the field. If the Contractor perceives that a conflict between the utilities and the traffic signal will occur, the Contractor shall notify the Project Engineer immediately so that the conflict may be resolved.
5. The contractor shall maintain the continuous operation of all interconnect, vehicular, pedestrian detectors, and lighting devices. If any device is damaged by the contractor, it shall be repaired within 72 hours by the contractor at no cost to the Administration.
6. Pushbuttons are to be located so that they can be activated by a person in a wheel chair from a 60" x 60" level landing area. A level landing area is an area with a cross slope of less than or equal to 2%.
7. Location of Accessible Pedestrian Signal pushbuttons must meet location requirements of MUTCD Sec. 4E.09 and Fig. 4E.2 and the NCHRP publication, "Accessible Pedestrian Signals: Guide to Best Practice". If not met, the Contractor is to stop work on pushbutton locations until a design Waiver is obtained, approved by the Director, Office of Traffic and Safety.
8. Pushbutton is to be located so that a pedestrian in a wheel chair located on the level landing area, does not have to reach more than 18 in.
9. The 10' separation between pushbuttons is to be measured from face of pushbutton to face of pushbutton, not center to center of poles.
10. Pushbutton arrows are to be parallel to the crossing for which they are intended.
11. The R10-10L sign is a temporary sign and shall be removed by SHA forces.

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EQUIPMENT LIST

A. EQUIPMENT TO BE FURNISHED BY STATE HIGHWAY ADMINISTRATION

ITEM NO./CAT CODE	QUANTITY	DESCRIPTION
9570	12 SF	SHEET ALUMINUM GROUND MOUNTED SIGN R4-8 (36" x 48")
9571	1 EA	SHEET ALUMINUM POLE MOUNTED SIGN R10-3(1)(9"x15")
	6 EA	SHIELD ASSEMBLY (30" x 51")
9572	1 EA	SHEET ALUMINUM SPAN MOUNTED SIGN R3-5 (30" x 36")
	2 EA	R10-10L (24" x 30")
	1 EA	D-3(1)(VAR. X 16")

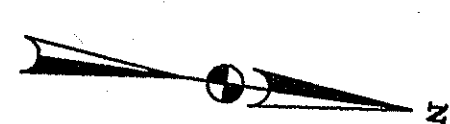
B. EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY CONTRACTOR

ITEM NO./CAT CODE	QUANTITY	DESCRIPTION
1001	1 EA	MAINTENANCE OF TRAFFIC
2002	3 CY	TEST PIT EXCAVATION
5002	970 LF	REMOVAL OF EXISTING PERM. PAVE. MARK.-ANY WIDTH
5003	2 EA	REMOVAL OF EXISTING PERM. PAVE. MARK. LETTERS, SYM., ARROWS, AND NUMBERS
5004	850 LF	12 IN. HEAT APPLIED WHITE PERM. PREF. THERO. PAVE. MARKINGS
5005	60 LF	24 IN. HEAT APPLIED WHITE PERM. PREF. THERO. PAVE. MARKINGS
6002	580 SF	4 INCH CONCRETE SIDEWALK
8001	50 EA	12 INCH LED SIGNAL HEAD SECTION (R,Y,G)
8002	1 EA	2 WIRE CENTRAL CONTROL UNIT
8008	6 EA	AUDIBLE/ TACTILE PEDESTRIAN PUSHBUTTON STATION AND SIGN
8009	6 EA	BREAKAWAY PEDESTAL POLE (ANY SIZE)
8012	6 EA	INSTALL BREAKAWAY PEDESTAL POLE (ANY SIZE)
8014	6 EA	LED 16 INCH COUNTDOWN PEDESTRIAN SIGNAL HEAD
8022	1 EA	REMOVE AND DISPOSE MATERIALS AND EQUIPMENT PER ASSIGNMENT
8032	2155 LF	DISCONNECT, PULL-BACK & REROUTE CABLES
8035	305 LF	SCHEDULE 80 RIGID PVC CONDUIT UP TO 4 INCHES - TRENCHED
8037	20 LF	WOOD SIGN SUPPORTS 4 X 6 INCHES
8038	64 SF	DETECTABLE WARNING SURFACE
8039	61 SF	INSTALL OVERHEAD OR GROUND MOUNTED SIGN - INCLUDING ALL HARDWARE
8041	215 LF	NO. 6 AWG STRANDED BARE COPPER GROUND WIRE
8047	3 EA	FURNISH AND INSTALL ELECTRICAL HANDHOLE
8052	2 EA	CUT, CLEAN, GALVANIZE AND CAP TRAFFIC SIGNAL STRUCTURE
8054	1750 LF	ELECTRICAL CABLE - 2 CONDUCTOR (NO. 14 AWG)
8056	2085 LF	ELECTRICAL CABLE - 5 CONDUCTOR (NO. 14 AWG)
8057	1580 LF	ELECTRICAL CABLE - 7 CONDUCTOR (NO. 14 AWG)

C. MATERIALS TO BE REMOVED BY THE CONTRACTOR SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

PHASE CHART

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PHASE 1 AND 5	←G-	←G-	R	R	←G-	←G-	R	R	R	R	R	R	R	R	DW	DW	DW	DW	DW	DW
1 AND 5 CHANGE	TO PHASES 1 AND 6 OR 2 AND 5 OR 2 & 6																			
PHASE 1 AND 6	←G-	←G-	G	G	←R-	←R-	R	R	R	R	R	R	R	R	DW	WK	WK	DW	DW	DW
1 CHANGE	←Y-	←Y-	G	G	←R-	←R-	R	R	R	R	R	R	R	R	DW	WK	WK	DW	DW	DW
PHASE 2 AND 5	←R-	←R-	R	R	←G-	←G-	G	G	R	R	R	R	R	R	WK	DW	DW	WK	DW	DW
5 CHANGE	←R-	←R-	R	R	←Y-	←Y-	G	G	R	R	R	R	R	R	WK	DW	DW	WK	DW	DW
PHASE 2 AND 6	←R-	←R-	G	G	←R-	←R-	G	G	R	R	R	R	R	R	WK	WK	WK	WK	DW	DW
PED. CLEAR	←R-	←R-	G	G	←R-	←R-	G	G	R	R	R	R	R	R	FLDW	FLDW	FLDW	FLDW	DW	DW
2 AND 6 CHANGE	←R-	←R-	Y	Y	←R-	←R-	Y	Y	R	R	R	R	R	R	DW	DW	DW	DW	DW	DW
PHASE 3 AND 7	←R-	←R-	R	R	←R-	←R-	R	R	←GR	←GR	R	←GR	←GR	R	DW	DW	DW	DW	DW	DW
3 AND 7 CHANGE	3 AND 7 CHANGE																			
PHASE 3 AND 8	←R-	←R-	R	R	←R-	←R-	R	R	R	R	R	←GG	←GG	G	DW	DW	DW	DW	DW	DW
3 CHANGE	←R-	←R-	R	R	←R-	←R-	R	R	R	R	R	←VG	←VG	G	DW	DW	DW	DW	DW	DW
PHASE 4 AND 7	←R-	←R-	R	R	←R-	←R-	R	R	←GG	←GG	G	R	R	R	DW	DW	DW	DW	DW	DW
7 CHANGE	←R-	←R-	R	R	←R-	←R-	R	R	←VG	←VG	G	R	R	R	DW	DW	DW	DW	DW	DW
PHASE 4 AND 8	←R-	←R-	R	R	←R-	←R-	R	R	G	G	G	G	G	G	DW	DW	DW	DW	DW	DW
4 AND 8 CHANGE	←R-	←R-	R	R	←R-	←R-	R	R	Y	Y	Y	Y	Y	Y	DW	DW	DW	DW	DW	DW
4 AND 8 ALT.	←R-	←R-	R	R	←R-	←R-	R	R	G	G	G	G	G	G	DW	DW	DW	DW	WK	WK
PED. CLEAR	←R-	←R-	R	R	←R-	←R-	R	R	G	G	G	G	G	G	DW	DW	DW	DW	FLDW	FLDW
4 AND 8 CHANGE	←R-	←R-	R	R	←R-	←R-	R	R	Y	Y	Y	Y	Y	Y	DW	DW	DW	DW	DW	DW
FLASHING OPERATION	FL/R	FL/R	FL/Y	FL/Y	FL/R	FL/R	FL/Y	FL/Y	FL/R	FL/R	FL/R	FL/R	FL/R	FL/R	DARK	DARK	DARK	DARK	DARK	DARK



WIRING DIAGRAM

